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ABSTRACT

Salary and compensation of faculty in Illinois public colleges and universities were studied using a cluster analytic approach. Twenty-seven institutional variables were factor analyzed to obtain a smaller set of closely related variables. Factor scores were obtained for each of the 1,126 institutions of higher education. A cluster analysis was then conducted to explore potential groupings of institutions based on similar factor scores patterns. A multiple group discriminant analysis was also conducted to refine the groups identified through cluster analysis and to determine the most significant factors in discriminating among clusters. The salary and compensation analyses for 1974 through 1979 were then conducted as follows: cluster mean, median, quartile range, quartile placement, minimum entry in cluster, maximum entry in cluster, and minimum-maximum range. The analysis was conducted for each academic rank and for all ranks combined. This analysis was conducted twice: first with raw data for salary and compensation and then with the salary and compensation data adjusted for cost of living. The variables were selected that were descriptive of the nature and comprehensiveness of the institution's academic programs, the size of the institution, the research emphasis of the institution, the status of faculty, and the selectivity of student admissions. Five factors were found to account for approximately 75 percent of the total variance: size and comprehensiveness, graduate program emphasis, undergraduate selectivity, master's emphasis, and faculty workload. Illinois institutions were generally found to receive lower salary and compensation than did institutions with similar characteristics in other states and the Illinois' levels declined in relative standing between 1974-75 and 1979-80. The 12 Illinois public institutions were classified into eight separate clusters, which are appended. (SW)

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Salary and Compensation in Higher Education: A Cluster Analytic Approach

Catherine N. Batsche

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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INTRODUCTION

This monograph is a summary of a research study that was 365 pages in length. The complete report has been abbreviated in order to present the reader with information related to faculty salary and compensation in Illinois public institutions of higher education. The original study however also included information about Illinois private institutions as well as public and private institutions in all fifty states. The reader is encouraged to review the original report to obtain additional information about the research methodology and findings. Similarly the review of the literature included in the original report will provide the reader with the economic, sociological and research foundations of the study.

As with any abbreviated report of a research study, caution must be exercised in interpreting the data without the benefit of the complete report. The major concerns and limitations have been listed below in an effort to minimize the risk of misinterpretation of the data. The complete report should be used to clarify any questions or interpretations. The following limitations and clarifications must be kept in mind throughout this report.

1. The institutional data utilized in this study was data that was self-reported by the institution to the HEGIS system for fiscal year 1977. The accuracy of the data was limited to the accuracy of data reported by an institution and subsequently reported by HEGIS.

2. The factor analysis was limited to the twenty-seven variables included in this study. Given additional variables, the results of the factor analysis, and consequently the results of the cluster analysis, may have produced differences in institutional classification.

3. The variables utilized in the factor analysis were limited to those institutional characteristics for which quantitative measurements could be obtained. Although some measures of institutional quality were utilized, additional measures would provide a more satisfactory profile of an institution.

4. The labels used to identify the factors must be interpreted with caution. A factor as labeled is actually an unobserved hypothetical variable for which there was no direct observation. Each factor was composed of variables that were found to be closely related through the factor analysis technique. The factor labels were used solely to facilitate discussion of the data.

5. The term "average" used in the discussion of the salary and compensation data was defined as the salary and compensation level reported by the institution that was at the median of the cluster.

6. All salary and compensation data were adjusted for cost of living differences among the states. Unless otherwise stated, ALL DATA DISCUSSED IN THIS REPORT HAVE BEEN ADJUSTED FOR COST OF LIVING.

7. Interpretation of the institutional all-rank data must be interpreted in conjunction with the data reported for each individual academic rank because the faculty "mix" of an institution effects the all-rank summary data.

SALARY AND COMPENSATION IN HIGHER EDUCATION: A CLUSTER ANALYTIC APPROACH

The study of faculty salary and compensation is a complex issue in higher education. Relatively little research has been conducted to assist decision makers with questions of interest to the academic community.[1] Much of the existing research has been criticized as being subjective, arbitrary, or narrow in scope. While the resulting information has been useful in particular situations, the inherent limitations have hindered systematic advancement of research and inquiry in the field of higher education finance.

There have been numerous problems to be overcome by the researcher in educational finance. These problems are typified by the lack of financial measurements and quality measurements necessary for the analysis of institutional status. The technical sophistication of such measurements must be taken seriously if research in educational finance is to continue to be responsive to needs of the field. If for no other reason than political necessity, the increasing use of financial measurements would seem to be inevitable in the future of higher education.[2]

Some progress has been made in the development of classification systems upon which to base comparisons of institutional salary and compensation. Unfortunately, the models available have yet to provide a satisfactory method for the study of interinstitutional salary and compensation. The need exists for exploration of models which can provide an alternative to or a supplement to the present methodology.

This problem was recognized by the Illinois Board of Higher Education (BHE). Since 1975, the BHE has utilized a model developed by Craig Bazzani to compare the status of Illinois institutions to similar institutions in other states.[3] The Bazzani approach was considered to be preferable to existing models because it was not based on the use of "threshold" criteria for classification of an institution into a group. The threshold models, such as those used by the American Association of University Professors and the Carnegie Commission on Higher Education, predetermine criteria that are considered to differentiate among institutions. Inclusion values are derived for each measure, and an institution is classified into a category, depending on its scores on the criterion measures. The threshold models have been criticized because of (1) the arbitrariness associated with the selection of criteria and threshold values, (2) the a priori specification of the classification structure, and (3) the limited number of institutional variables utilized.[4]

The Bazzani approach avoided some of the problems of the threshold models by using a methodology that allowed the development of clusters of similar institutions based on multiple institutional variables. This approach did not require the a priori specification of threshold criteria values. Although the Bazzani model proved to be a satisfactory alternative to the threshold models, the need to update and expand the approach became apparent to the staff of the Illinois Board of Higher Education. Since the time of the Bazzani study (1972), there have been numerous advances in data collection, analysis, and retrieval techniques. It was therefore decided to explore an alternative classification model that would provide a more complex system for data analysis based on a wider variety of institutional variables. This study was undertaken in cooperation with the Illinois Board of Higher Education in order to develop an alternative model.

SUMMARY OF RESEARCH DESIGN

Twenty-seven institutional variables were submitted to a factor analysis to obtain a smaller set of factors composed of closely related variables. Factor scores were then obtained for each of the 1,126 institutions of higher education included in this study. Next, a cluster analysis was conducted to explore potential groupings of institutions based on similar factor score patterns. A multiple group discriminant analysis was conducted to further examine and refine the groups identified through the cluster analysis and to determine which factors were most significant in discriminating among clusters.

Following the development of clusters of institutions based on similar factor score patterns, the salary and compensation analyses were conducted. The salary and compensation data were obtained from the American Association of University Professors for two historical years (1974-75 and 1978-79) and for the year under investigation (1979-80). The following analyses were conducted separately for salary and for compensation for each of the three years: cluster mean, median, quartile range, quartile placement, minimum entry in cluster, maximum entry in cluster, and minimum-maximum range. The analysis was conducted for each academic rank (professor, associate professor, assistant professor, and instructor) and for all ranks combined.

This analysis was conducted twice: first with the raw data for salary and compensation and then with the salary and compensation data adjusted for cost of living. The McMahon-Melton Index provided a measure of cost of living differences among forty-eight of the fifty states. The mean salary and compensation data of each of the twelve Illinois public institutions and thirty-seven Illinois private institutions were compared to their respective cluster profile.

INSTITUTIONAL VARIABLES

Twenty-seven institutional variables were included in the study. The variables were selected as a result of the review of the literature and through discussion with the staff of the Illinois Board of Higher Education. Variables were sought that were descriptive of (1) the nature and comprehensiveness of the institution's academic programs, (2) the size of the institution, (3) the research emphasis of the institution, (4) the status of faculty at the institution, and (5) the selectivity of student admissions. In constrast to the "threshold" approaches to salary analysis, no criterion or threshold value was predetermined for institutional characteristics.

Nature and Mix of an Institution's Academic Programs (A)

1. Number of Bachelor Degrees Awarded. The number of bachelor degrees awarded by an institution as reported to HEGIS was considered to be a measure of program size at the undergraduate level (ADEG1).

2. Number of Master Degrees Awarded. The number of master degrees awarded for an academic year as reported to HEGIS was considered to be a measure of program size at the masters level (ADEG2).

3. Number of Doctoral Degrees Awarded. The number of doctoral degrees awarded for an academic year as reported to HEGIS was considered to be a measure of the program size at the doctoral level of instruction (ADEG3).

4. Number of Bachelor Level Disciplines Offered. The number of disciplines in which bachelor degrees were offered was considered to be a measure of program breadth at the bachelor's level. The data were obtained from the number of two-digit HEGIS discipline codes reported by an institution (ABRED1).

5. Number of Master Level Disciplines Offered. The number of disciplines in which masters degrees were offered was considered to be a measure of program breadth at the masters level. The data were obtained from the number of two-digit HEGIS discipline codes reported by an institution (ABRED2).

6. Number of Doctoral Level Disciplines Offered. The number of disciplines in which doctoral degrees were offered was considered to be a measure of program breadth at the doctoral level. The data were obtained from the number of two-digit HEGIS discipline codes reported by an institution (ABRED3).

7. Depth of Bachelor Program. The average number of bachelor degrees for each discipline was considered to be a measure of program depth at the bachelors level of instruction. This information was obtained from the four-digit discipline codes reported by an institution to HEGIS (ADEP1).

8. Depth of Masters Program. The average number of master degrees for each discipline was considered to be a measure of program depth at the masters level of instruction. This information was obtained from the four-digit discipline code reported by an institution to HEGIS (ADEP2).

9. Depth of Doctoral Program. The average number of doctoral degrees for each discipline was considered to be a measure of program depth at the doctoral level of instruction. This information was obtained from the four-digit discipline codes reported by an institution to HEGIS (ADEP3).

10. Total Number of Bachelor Degrees in Education In Relation to The Total Number of Bachelor Degrees. This variable was considered to be a measure of program comprehensiveness at the bachelors level (ACOMP1).

11. Total Number of Master Degrees in Education In Relation to the Total Number of Master Degrees. This variable was considered to be a measure of program comprehensiveness at the masters level (ACOMP2).

12. Total Number of Doctoral Degrees in Education In Relation to The Total Number of Doctoral Degrees. This variable was considered to be a measure of program comprehensiveness at the doctoral level (ACOMP3).

13. Percentage of Full-time Students Who Are Undergraduates. This variable was considered to be a measure of the characteristics of the student body of an institution (AFTUG).

Size (B)

14. Total Full-time Equivalent (FTE) Enrollment. The total full-time equivalent enrollment at all levels of instruction was considered to be a measure of overall size (BFTE).

15. Total FTE Enrollment of Graduate Students. The total full-time equivalent enrollment of graduate students was considered to be a measure of overall size of the institution (BTGFTE).

16. Total First Professional FTE Enrollment. The number of students enrolled in a professional school or program which required at least two academic years of college work for entrance and a total of six years for a degree was considered to be a measure affecting size (BTFP).

17. Total Professional Staff. The full-time equivalent number of professional staff employed by the institution was considered to be a measure of overall size (BFSTAF).

18. Total Educational and General Expenditures. The total amount of expenditures reported in the HEGIS financial reports was considered to be an overall measure of the financial support required to operate the institution (BTEG).

Research Emphasis (C)

19. Grant and Contract Revenue. The current fund revenues, restricted governmental grants, and contracts were considered to be a measure of externally funded research support received by an institution. The data were obtained from the HEGIS documents (CCRF).

Status of Faculty (D)

20. Number of Full Professors. This variable was considered to be a measure of overall size and an indication of the experience and maturity levels of faculty employed by an institution (DDIST1).

21. Number of Associate Professors. This variable was considered to be a measure of overall size and an indication of the experience and maturity levels of faculty employed by an institution (DDIST2).

22. Number of Assistant Professors. This variable was considered to be a measure of overall size and an indication of the experience and maturity levels of faculty employed by an institution (DDIST3).

23. Number of Instructors. This variable was considered to be a measure of overall size and an indication of the experience and maturity levels of faculty employed by an institution (DDIST4).

24. Faculty Workload. The ratio of total FTE enrollment to the total number of faculty employed by the institution was considered to be a measure of the workload assignments of faculty employed by an institution (DFACWL).

25. Percentage of Total Faculty Who Are Full Professors. The percentage of faculty who had reached the rank of full professor was considered to be a measure of experience and maturity level of the faculty employed by an institution (DPROF).

Selectivity of Admission (E)

26. Total Degrees Conferred per Total Enrollment. The total number of degrees conferred for all programs in comparison to the total FTE enrollment was considered to be a measure of overall program quality and student quality for each institution (ERET).

27. Barron's Selectivity Index. The Barron's Selectivity Index was used as a measure of undergraduate admission selectivity. The Index is published annually and is based on the admission data submitted by an institution. The Barron's Index is based on the admitted students' high school achievement and academic aptitude and on the institution's ratio of applications of offers of admissions (BARRON).

DATA COLLECTION

The data used for the institutional variables were obtained from the Higher Education General Information Survey (HEGIS) for fiscal year 1977.[5] The reports obtained included: (1) "Degrees and Other Formal Awards Conferred Between July 1, 1977 and June 30, 1978," (2) "Institutional Characteristics of Colleges and Universities: 1977-78," and (3) "Financial Statistics of Institutions of Higher Education For Fiscal Year Ending 1978." The Barron's Profiles of American Colleges was used as the source for the Barron's Index of undergraduate selectivity.[6]

Data were also collected for salary and compensation means of each institution included in the study. The salary and compensation data were obtained from the American Association of University Professors for each of the three years under investigation: 1974-75,[7] 1978-79,[8] and 1979-80.[9]

The salary data included the adjusted standard academic year dollar value paid to faculty. Compensation data included the combination of salary plus countable fringe benefits such as Social Security, unemployment compensation, and workmen's compensation which were required by state or federal law. Nonmandatory benefits included retirement, life insurance, disability income protection, health insurance, tuition benefits, housing subsidies, and benefits in kind with cash options.

All salary and compensation data were converted to a standard academic year base. The mean salary and compensation data were collected for each academic rank within the 1,126 institutions.

SUMMARY OF PRINCIPAL FINDINGS

The following results were obtained through application of the research design.

1. Five factors were found to account for approximately 75 percent of the total variance among the twenty-seven variables included in this study. These factors were:

   SIZE AND COMPREHENSIVENESS[10]
   GRADUATE PROGRAM EMPHASIS
   UNDERGRADUATE SELECTIVITY
   MASTER'S EMPHASIS
   FACULTY WORKLOAD

2. The Size and Comprehensiveness of an institution explained the largest percentage of variance (51.8 percent) among the five factors.

3. The five factors discriminated among clusters of public institutions in a different order than they did among clusters of private institutions. Whereas Size and Comprehensiveness of the institution was the factor that best discriminated among the public institution clusters, Master's Emphasis was the factor that best discriminated among the private institution clusters.

4. Based on similar factor score patterns, the 416 public institutions used in this study were grouped into eighteen clusters and the 702 private institutions were grouped into twenty-seven clusters.

5. Illinois institutions were classified in eight of the eighteen clusters of public institutions. Northeastern, Chicago State, Southern Illinois University-Edwardsville, and Western Illinois University were classified in the same cluster. Illinois State University and Northern Illinois University were also classified in one cluster. All other public institutions were classified in clusters in which they were the only Illinois institution.

6. Illinois institutions were classified in seventeen of the twenty-seven clusters of private institutions. Ten of these clusters contained two or more Illinois private institutions.

7. Seventy-five percent of the Illinois public institutions were below the all-rank salary and compensation average of their respective clusters. Sixty-six percent were within the lowest quartile.

8. Forty-two percent of the Illinois private institutions were below the all-rank salary average of their respective clusters. Seventy-four percent were below the all-rank compensation average. In contrast to the Illinois public institutions, only 18 percent of the private institutions were in the lowest quartile of their respective clusters.

9. The all-rank compensation comparison of Illinois public institutions indicated that none of the institutions increased their relative standing among institutions in their respective clusters over a five-year time period. The relative standing of four of the twelve public institutions declined over the five-year time period. Five of the seven public institutions that maintained their relative status were within the lowest quartile throughout the comparison years.

10. The all-rank comparison indicated that the average salary of the private Illinois institution clusters was generally lower than the average salary of the public institution clusters. Only two clusters of private institutions exceeded the lowest average salary obtained in the public institution clusters.

11. Although the average salary and compensation data of the Illinois private institution clusters were lower than the average salary and compensation data of the Illinois public clusters, the relative standing of the Illinois private institutions was generally higher within their respective cluster than was the relative standing of the Illinois public institutions.

12. A majority of the Illinois public institutions were within the two lowest quartiles for the salaries of professors (81.2 percent of the institutions), associate professors (90.9 percent), assistant professors (90.9 percent), and instructors (60 percent). Among the twelve public Illinois institutions, 54.5 percent were in the lowest quartile for professor salaries. Similarly low percentages were obtained at the associate professor level (45.5 percent), assistant professor level (72.7 percent), and instructor level (50.0 percent).

13. All twelve Illinois public institutions were within the two lowest quartiles for the compensation of professors, associate professors, and assistant professors. Seventy percent of the institutions were in the two lowest compensation quartiles. Among the twelve public institutions, 90.9 percent were in the lowest quartile for professor compensation. Similarly low percentages were obtained at the associate professor level (72.7 percent), assistant professor level (63.6 percent), and instructor level (60 percent).

14. The five-year compensation comparison indicated that there was a relative decline at the upper academic ranks, accompanied by a relative gain at the lower ranks in public institutions. Eighty-two percent of the Illinois public institutions declined in relative standing at the professor level, and 54 percent declined at the associate professor level. At the assistant professor level, 45.4 percent of the institutions declined and 9 percent increased in relative placement. In contrast, only 10 percent of the public institutions declined at the instructor level and 40 percent increased their relative standing.

15. In contrast to the public institutions, relative change in faculty standing was more consistent across all ranks in the private institutions over the five-year period.

DISCUSSION OF RESULTS

Relative Placement of Illinois Public Institutions

The twelve public institutions in Illinois were classified into eight of the eighteen clusters. Nine of the twelve Illinois public institutions were below the average all-rank salary levels of their respective clusters in 1979-80 (see Table 1). Six of the twelve Illinois public institutions were within the lowest quartile of all-rank salaries reported by institutions within their cluster. All twelve public institutions were below the average all-rank compensation level of their respective clusters. Eight of the twelve Illinois public institutions were within the lowest quartile of all-rank compensation for their cluster. There were only three Illinois public institutions whose all-rank salary figures were above the second quartile and these institutions dropped to the two lower quartiles in the total compensation analysis.

In comparison to salaries of other institutions in their cluster, five of the twelve Illinois public institutions declined in relative standing by at least one quartile between 1974-75 and 1979-80. Two institutions increased their standing by one quartile over the five-year period. The relative standing of five public Illinois institutions remained the same over the five-year period, but three of these institutions were within the lowest quartile at the beginning of the five-year comparison, so it was not possible to determine a decline in rank. Suffice it to say, they did not improve their relative salary quartile standing.

The compensation comparison of Illinois public institutions indicated that none of the institutions had increased the relative standing over time and four had declined in relative standing by at least one quartile. Four of the eight public institutions that maintained their relative status over the five-year period were in quartile 1 throughout the comparison years.

TABLE 1

QUARTILE PLACEMENTS OF ALL-RANK SALARY AND COMPENSATION
ADJUSTED FOR COST OF LIVING--PUBLIC INSTITUTIONS

Cluster	Salary			Compensation		
	1974-75	1978-79	1979-80	1974-75	1978-79	1979-80
3						
Eastern Ill. Univ.	2	1	1	1	1	1
6						
Sangamon	2	3	3	3	3	2
7						
Northeastern	3	3	2	2	2	2
Chicago State	2	1	1	2	2	2
SIU-Edwardsville	3	2	3	2	1	2
Western	2	2	2	1	1	1
11						
SIU-C	1	1	1	1	1	1
12						
ISU	1	1	1	1	1	1
NIU	1	1	1	2	1	1
14						
U of I-CC	3	4	1	2	1	1
16						
Governors	3	2	2	2	2	2
17						
U of I-U	2	3	3	2	2	1

The all-rank salary data suggested that, in relation to similar institutions in the United States, the salary and compensation figures of Illinois public institutions were generally below average. The 1979-80 all-rank average salary data for Illinois public institutions ranged from $4,200 below average (Southern Illinois University-Carbondale) to $500 above average (Southern Illinois University-Edwardsville) (see Table 2). The all-rank compensation data for Illinois public institutions ranged from $5,600 below average (Southern Illinois University-Carbondale) to a compensation level that was equivalent to the cluster averages (Sangamon State and Southern Illinois University-Edwardsville). No Illinois public institution was above the average all-rank compensation figures for their respective cluster.

The analysis of salary and compensation for each academic rank was equally discouraging. (Governors State was not included in this section of the discussion, so the number of Illinois public institutions was reduced to eleven.) At the professor level, nine of the eleven Illinois public institutions (81.2 percent) were in the two lowest salary quartiles (see Table 3). Six of these nine institutions were in quartile 1 (54.5 percent). All eleven Illinois public institutions (see Table 4) were in the two lower quartiles of professor compensation and ten of these institutions were in quartile 1 (90.9 percent). Translated to dollars, the rankings resulted in a mean professor salary in Illinois that ranged from $4,200 below the cluster average (Southern Illinois University-Carbondale) to $2,200 above the mean (University of Illinois-Chicago Circle) in 1979-80. All Illinois public institutions were below the cluster average for professor compensation in 1979-80 (ranging from $5,600 below at Southern Illinois University-Carbondale to $400 below the mean at Sangamon State University).

At the associate professor level, ten of the eleven Illinois public institutions (90.9 percent) were in the two lowest salary quartiles; five (45.5 percent) of these institutions were in the lowest quartile. All eleven Illinois public institutions were within the two lowest compensation quartiles and eight (72.7 percent) of these were in quartile 1. The mean associate professor salary in Illinois (see Table 5) ranged from $2,300 below the cluster average (Southern Illinois University-Carbondale) to $600 above average (UI-CC) in 1979-80. In terms of total compensation (see Table 6), Illinois associate professors ranged from $3,900 below the cluster average (Southern Illinois University-Carbondale) to $300 below average (Sangamon State University).

At the assistant professor level, ten of the eleven public institutions (90.9 percent) were within the two lowest salary quartiles and five of these institutions were within the lowest quartile (45.5 percent). All Illinois institutions were within the two lowest quartiles for compensation; seven of these (63.6 percent) were in quartile 1. In 1979-80, the mean assistant professor salary in Illinois ranged from $2,400 below cluster average (Southern Illinois University-Carbondale) to $200 above average (University of Illinois-Chicago Circle). The mean assistant professor compensation ranged from $3,200 below the cluster average (Southern

TABLE 2

ALL-RANK AVERAGE SALARY AND COMPENSATION ADJUSTED FOR COST OF LIVING--PUBLIC INSTITUTIONS[a]

Cluster	Average Salary			Average Compensation		
	1974-75	1978-79	1979-80	1974-75	1978-79	1979-80
3	16.0	20.5	22.3	19.2	24.3	26.9
Eastern Ill. Univ.	15.7	18.9	20.2	17.8	21.6	22.3
6	16.4	19.7	21.4	17.3	23.1	25.0
Sangamon State	16.3	20.3	21.5	18.4	23.4	25.0
7	15.4	19.3	21.7	18.8	23.4	25.6
Northeastern	15.6	19.5	[illegible].7	17.6	22.3	24.0
Chicago State	15.4	18.5	19.6	18.4	22.9	25.0
SIU-Edwardsville	15.9	20.7	22.2	18.1	20.7	25.6
Western	15.0	19.0	20.5	17.1	21.8	23.7
11	20.5	23.9	25.4	20.7	25.9	29.2
SIU-C	16.2	19.9	21.2	18.4	22.9	24.9
12	18.1	21.5	23.1	19.2	24.9	27.0
ISU	15.9	19.7	20.7	18.0	22.9	24.9
NIU	17.0	19.4	21.7	19.2	22.2	25.1
14	16.7	21.7	24.8	19.5	27.1	31.7
U of I-CC	17.1	22.4	23.9	19.3	25.7	27.7
16	15.9	20.1	21.7	18.0	22.9	25.0
Governors	16.3	20.1	21.7	17.6	21.1	22.7
17	20.0	24.8	26.6	22.4	29.5	32.1
U of I-U	19.1	24.9	26.7	21.6	28.5	31.0

[a]Nine month figures in thousands of dollars.

TABLE 3

SALARY QUARTILE PLACEMENTS FOR ILLINOIS PUBLIC INSTITUTIONS

Cluster	Salary							
	1974-75				1979-80			
	Prof.	Asso.	Assi.	Inst.	Prof.	Asso.	Assi.	Inst.
3								
Eastern Ill. Univ.	2	2	1	1	1	1	1	1
6								
Sangamon State	3	2	2	--	3	2	2	--
7								
Northeastern	1	1	1	3	1	1	2	3
Chicago State	3	2	3	1	1	1	1	1
SIU-Edwardsville	1	2	3	2	2	2	2	3
Western Illinois	1	1	2	1	1	2	2	1
11								
SIU-Carbondale	1	1	1	1	1	1	1	1
12								
Illinois State	2	2	1	1	1	2	1	2
Northern Illinois	2	2	1	1	2	2	1	1
14								
U of I-CC	4	4	4	4	4	4	3	3
16								
Governors State	--	--	--	--	--	--	--	--
17								
U of I-U	2	1	1	1	2	1	2	3

TABLE 4

COMPENSATION QUARTILE PLACEMENTS FOR ILLINOIS PUBLIC INSTITUTIONS

Cluster	Compensation							
	1974-75				1979-80			
	Prof.	Asso.	Assi.	Inst.	Prof.	Asso.	Assi.	Inst.
3								
Eastern Ill. Univ.	2	2	1	1	1	1	1	1
6								
Sangamon State	3	3	3	--	2	2	2	--
7								
Northeastern	1	1	1	2	1	1	2	3
Chicago State	2	2	2	1	1	1	1	1
SIU-Edwardsville	2	2	2	2	1	2	2	3
Western Illinois	2	1	2	1	1	1	2	1
11								
SIU-Carbondale	1	1	1	1	1	1	1	1
12								
Illinois State	2	2	1	1	1	1	1	2
Northern Illinois	3	3	2	1	2	2	1	1
14								
U of I-CC	4	4	3	3	1	1	1	1
16								
Governors State	--	--	--	--	--	--	--	--
17								
U of I-U	2	1	2	1	1	1	1	3

TABLE 5

AVERAGE SALARY BY RANK ADJUSTED FOR COST OF LIVING--
ILLINOIS PUBLIC INSTITUTIONS[a]

Cluster	Average Salary							
	1974-75				1979-80			
	Prof.	Asso.	Assi.	Inst.	Prof.	Asso.	Assi.	Inst.
3	21.0	16.3	13.5	11.3	27.5	22.0	18.3	15.3
Eastern Ill. Univ.	19.8	16.1	10.5	9.9	25.2	20.4	16.8	13.2
6	20.6	17.1	14.0	11.2	27.1	22.4	18.8	15.7
Sangamon State	20.9	17.1	13.9	--	27.3	22.0	18.5	--
7	21.0	16.4	13.3	11.1	26.8	21.7	18.1	14.7
Northeastern	19.3	15.4	13.0	11.2	24.2	20.1	17.3	15.4
Chicago State	20.6	16.1	13.4	10.3	23.8	20.0	16.2	13.0
SIU-Edwardsville	20.2	16.3	13.5	11.1	25.8	21.4	18.1	15.0
Western Illinois	20.1	15.6	13.3	9.9	25.0	20.6	17.6	12.0
11	23.8	18.3	15.1	11.6	31.9	23.9	19.7	15.7
SIU-Carbondale	21.2	16.3	13.5	10.8	27.7	21.6	17.3	14.2
12	21.8	17.4	14.3	11.3	28.9	22.8	18.9	15.5
Illinois State	21.1	17.1	13.7	10.6	26.8	21.7	17.7	14.7
Northern Illinois	21.7	17.4	13.7	10.1	28.3	22.8	17.7	12.3
14	21.7	16.2	13.4	11.4	28.9	22.4	18.3	16.0
U of I-CC	23.1	17.4	13.8	11.8	31.1	23.0	18.5	16.0
16	21.0	17.0	14.1	11.8	27.1	22.2	18.8	15.0
Governors State	--	--	--	--	--	--	--	--
17	23.9	17.8	14.5	11.5	32.8	24.0	19.6	15.9
U of I-U	23.9	16.9	14.0	10.2	32.7	22.9	19.5	17.1

[a]Nine month figures in thousands of dollars.

TABLE 6

AVERAGE COMPENSATION BY RANK ADJUSTED FOR COST OF LIVING--
ILLINOIS PUBLIC INSTITUTIONS[a]

Cluster	Average Compensation							
	1974-75				1979-80			
	Prof.	Asso.	Assi.	Inst.	Prof.	Asso.	Assi.	Inst.
3	24.1	19.4	15.9	13.6	31.8	25.8	21.6	18.7
Eastern Ill. Univ.	22.4	18.3	14.6	11.4	29.2	23.7	19.7	15.6
6	22.3	18.5	15.7	12.2	32.0	25.9	21.7	17.4
Sangamon State	23.7	19.4	15.8	--	31.6	25.6	21.7	--
7	23.9	19.1	15.6	13.1	31.9	25.5	21.0	16.8
Northeastern	21.9	17.5	14.8	12.8	27.9	23.3	20.1	17.9
Chicago State	23.5	18.3	15.3	11.9	27.4	23.2	18.9	15.2
SIU-Edwardsville	22.9	18.5	15.4	12.7	29.7	24.8	21.0	17.3
Western Illinois	22.8	17.7	15.2	11.4	28.9	23.8	20.4	14.0
11	26.3	20.5	17.0	13.1	37.5	28.8	23.3	17.9
SIU-Carbondale	24.0	18.5	15.4	12.4	31.9	24.9	20.1	16.6
12	24.3	19.4	16.0	12.7	33.7	26.8	21.8	17.9
Illinois State	23.8	19.4	15.6	12.1	30.9	25.1	20.6	17.2
Northern Illinois	24.6	19.7	15.7	11.6	32.5	26.3	20.6	14.5
14	24.4	18.7	15.7	13.3	36.7	28.7	23.8	20.5
U of I-CC	26.1	19.8	15.8	13.5	35.9	26.7	21.6	18.7
16	23.1	18.9	15.7	13.2	30.6	25.4	21.4	16.0
Governors State	--	--	--	--	--	--	--	--
17	27.3	20.9	17.3	13.8	38.9	29.2	24.0	19.6
U of I-U	27.1	19.2	16.0	11.8	37.8	26.7	22.8	20.1

[a]Nine month figures in thousands of dollars.

Illinois University-Carbondale) to a compensation level that was equivalent to the mean (Sangamon State University and Southern Illinois University-Edwardsville).

Ten Illinois public institutions reported salary figures at the instructor level. Six of the ten (60 percent) were within the two lowest quartiles; five of these (50 percent) were within quartile 1. Four institutions were within the third quartile for instructor salaries (Northeastern, SIU-E, University of Illinois-Chicago Circle, and University of Illinois-Urbana). Seven of the ten Illinois public universities were in the two lowest quartiles for instructor compensation and six of the ten were in quartile 1. Three institutions were in quartile 3. In 1979-80, instructor salaries in Illinois public institutions ranged from $3,200 below the cluster average (Northern Illinois University) to $1,200 above the cluster average (University of Illinois-Urbana). Instructor compensation ranged from $3,400 below the cluster average (Northern Illinois University) to $1,100 above average (Northeastern).

The five-year comparison suggested that professors at Illinois public universities experienced a relative decline in standing between 1974-75 and 1979-80 in comparison to other institutions in their cluster. Nine of the eleven Illinois public institution professor rankings (81.8 percent) declined in relative placement by at least one quartile in the five-year period. At the assistant professor level, 45.4 percent declined in quartile rankings, but one institution (9 percent) increased its ranking over time. In contrast, only 10 percent of the institutions declined at the instructor level, while 40 percent increased their relative standing. It should be noted that 50 percent of the institutions were in the lowest quartile at the assistant professor and instructor levels throughout the five-year period and these institutions did not change in status. However, it did appear that faculty at the professor level in Illinois public institutions generally had not maintained their relative standing over time as well as the other ranks. During the same time period, instructors generally increased their relative standing among institutions in their cluster or did not experience as much of a relative loss as did faculty at the upper ranks.

COST OF LIVING ADJUSTMENTS

Adjusted Salary and Compensation

The McMahon-Melton Cost of Living Index was used to adjust the salary and compensation data for differences in cost of living in forty-eight of the fifty states.[11] It was necessary to exclude Hawaii and Alaska from the study because a cost of living index was not available for these states. The McMahon-Melton Index used the value of 100 to represent the national average for all states weighted by their population. Values above 100 indicated that cost of living was above average. Values below 100 indicated that cost of living was below average. Because the purpose of this study was to

compare Illinois institutions with institutions in other states, the Illinois value (109.5) was used as the base and all other values were adjusted by dividing the original value by the Illinois value. Table 7 contains values for the original and the adjusted index.

The salary and compensation data for all institutions in each cluster were adjusted for cost of living differences among states. This calculation allowed a comparison of salary and compensation data with a control for the differences in cost of living. The adjusted data provided a more accurate base for salary comparison within a cluster than did the raw data. Without this adjustment, the possibility existed that salary data for a cluster could be skewed because of an uneven geographic representation of institutions. The salary and compensation analyses were repeated using the adjusted data. The mean, quartile, quartile range, minimum compensation, maximum compensation, and minimum-maximum range were calculated for each rank within each cluster. An all-rank mean was also calculated.

Table 8 includes the unadjusted data for total compensation at each rank. The table compares the mean compensation of each Illinois institution to the compensation level determined to be at the median of the institutional compensation means for the cluster (hereafter referred to as "average"). The relative difference of the Illinois institution mean from the cluster average was also included in the table. Table 9 contains the same categories of information, but the data used was adjusted for cost of living.

For example, Table 8 indicated that the mean professor compensation at Illinois State University (ISU) was $30,900. The average professor compensation for institutions classified in cluster 12 was $30,300 prior to the cost of living adjustment. However, after the data were adjusted for cost of living differences (Table 9), the average professor compensation for institutions classified in cluster 12 was $33,700. The Illinois data were used as the base for cost of living adjustments, therefore, the compensation for professors at Illinois State University did not change. This example reflected the importance of the cost of living adjustment when comparing institutional salaries and compensation. If the data had not been adjusted for cost of living, the mean professor salary at ISU would have been considered to have been $600 above the cluster average. Following the cost of living adjustment, the mean professor compensation at ISU was actually $2,800 below the average. The differentiation occurred because Illinois State University was classified in a cluster which included several schools from the southern region of the United States. The cost of living index adjusted for Illinois was 100.0, whereas the Illinois-adjusted cost of living index for many of the cluster 12 institutions was considerably lower (e.g., Alabama 84.6, Mississippi 83.2, Tennessee 85.1, and Texas 84.9).

TABLE 7

MCMAHON-MELTON INDEX FOR COST OF LIVING--
ORIGINAL AND ILLINOIS ADJUSTED VALUES

State	Illinois Adjusted Index	Original Index
Alabama	84.6	92.6
Arkansas	83.0	90.9
Arizona	96.3	105.4
California	104.7	114.6
Colorado	97.6	106.9
Connecticut	116.7	127.8
Delaware	107.9	118.1
District of Columbia	101.6	111.2
Florida	89.5	98.0
Georgia	87.9	96.2
Idaho	93.6	102.5
Illinois	100.0	109.5
Indiana	93.5	102.4
Iowa	92.8	101.6
Kansas	91.1	99.7
Kentucky	91.9	100.6
Louisiana	87.5	95.8
Maine	89.1	97.6
Maryland	[illegible]0	120.4
Massachusetts	104.6	114.5
Michigan	97.8	107.1
Minnesota	97.9	107.2
Mississippi	83.2	91.1
Missouri	93.7	102.6
Montana	93.9	102.8
Nebraska	92.5	101.3
Nevada	103.7	113.6
New Hampshire	103.5	113.3
New Jersey	113.2	124.0
New Mexico	92.3	101.1
New York	107.2	117.4
North Carolina	85.8	93.9
North Dakota	94.5	103.5
Ohio	97.2	106.4
Oklahoma	83.3	91.2
Oregon	95.3	104.3
Pennsylvania	92.4	101.2
Rhode Island	100.5	110.1
South Carolina	85.8	94.0
South Dakota	91.1	99.7
Tennessee	85.1	93.2
Texas	84.9	93.0
Utah	96.0	105.1
Vermont	98.3	107.6
Virginia	91.1	99.7
West Virginia	82.7	90.6
Washington	99.2	108.6
Wisconsin	96.8	106.0
Wyoming	95.3	104.4
Hawaii	0.	-----
Alaska	0.	-----

TABLE 8

COMPENSATION DATA NOT ADJUSTED FOR COST OF LIVING[a]

Faculty Ranks	Board of Regents			Univ. of Illinois		Board of Governors					So. Ill. Univ.	
	ISU	NIU	SSU	U/C	C/C	EIU	NEIU	DSU	WIU	GOV	C	E
Professor												
Illinois University	30.9	32.5	31.6	37.5	35.9	29.2	27.9	27.4	28.9	-	31.9	29.7
Cluster Average	30.3	30.3	29.9	37.5	38.3	32.9	33.1	33.1	33.1	-	34.2	33.1
Relative Difference	+.6	+2.2	+1.7	0.	-2.4	-3.7	-5.2	-5.7	-4.2	-	-2.3	-3.4
Associate Professor												
Illinois University	25.1	26.3	25.6	26.7	26.7	23.7	23.3	23.2	23.8	-	24.9	24.8
Cluster Average	24.8	24.8	24.8	27.8	30.3	26.9	26.8	26.8	26.8	-	26.3	26.8
Relative Difference	+.3	+1.5	+.8	-.9	-3.6	-3.2	-3.5	-3.6	-3.0	-	-1.4	-4.0
Assistant Professor												
Illinois University	20.5	20.6	21.7	22.8	21.6	19.7	20.1	18.9	20.4	-	20.1	21.0
Cluster Average	20.4	20.4	20.5	22.9	24.8	21.9	22.1	22.1	22.1	-	21.0	22.1
Relative Difference	+.1	+.2	+1.2	-.1	-3.2	-2.2	-2.0	-3.2	-1.7	-	-.9	-1.1
Instructor												
Illinois University	17.2	14.5	-	20.1	18.7	15.6	17.9	15.2	14.0	-	16.6	17.7
Cluster Average	16.3	16.3	-	18.4	21.1	17.9	17.6	17.6	17.6	-	16.5	17.6
Relative Difference	+.9	-1.8	-	+1.7	-2.8	-2.3	+.3	-2.4	-3.6	-	+.1	+.1
Cluster Number:	12	12	6	17	14	3	7	7	7	16	11	7

[a]Nine month figures in thousands of dollars.

TABLE 9

COMPENSATION DATA ADJUSTED FOR COST OF LIVING[a]

Faculty Ranks	Board of Regents			Univ. of Illinois		Board of Governors					So. Ill. Univ.	
	ISU	NIU	SSU	U/C	C/C	EIU	NEIU	CSU	WIU	GSU	C	E
Professor												
Illinois University	30.9	32.5	31.6	37.8	35.9	29.2	27.9	27.4	28.9	-	31.9	29.7
Cluster Average	33.7	33.7	32.0	38.9	36.7	31.8	31.9	31.9	31.9	-	37.5	31.9
Relative Difference	-2.8	-1.2	-.4	-1.1	-.8	-2.6	-4.0	-4.5	-3.0	-	-5.6	-2.2
Associate Professor												
Illinois University	25.1	26.3	25.6	26.7	26.7	23.7	23.3	23.2	23.8	-	24.9	24.8
Cluster Average	26.8	26.8	25.9	29.2	28.7	25.8	25.5	25.5	25.5	-	28.8	25.5
Relative Difference	-1.7	-.5	-.3	-2.5	-2.0	-2.1	-2.2	-2.3	-1.7	-	-3.9	-.7
Assistant Professor												
Illinois University	20.6	20.6	21.7	22.8	21.6	19.7	20.1	18.9	20.4	-	20.1	21.0
Cluster Average	21.8	21.8	21.7	24.0	23.8	21.6	21.0	21.0	21.0	-	23.3	21.0
Relative Difference	-1.2	-.8	0.	-1.2	-2.2	-1.9	-.9	-2.1	-.6	-	-3.2	0.
Instructor												
Illinois University	17.2	14.5	-	20.1	18.7	15.6	17.9	15.2	14.0	-	16.6	17.3
Cluster Average	17.9	17.9	-	19.6	20.5	18.7	16.8	16.8	16.8	-	17.9	16.8
Relative Difference	-.7	-3.4	-	+.5	-1.8	-3.1	+1.1	-1.6	-2.8	-	-1.3	+.5
Cluster	12	12	6	17	14	3	7	7	7	16	11	7

[a]Nine month figures in thousands of dollars.

The comparison of adjusted and nonadjusted data had differing effects on different clusters, depending on the composition and geographic weighting of institutions within the cluster. In cluster 3, 7, and 14, the effect of the cost of living adjustment was to decrease the magnitude of dollar value loss/gain of Illinois institutions in comparison to other institutions in the cluster. More specifically, clusters 3, 7, and 14 tended to be weighted with institutions in states in which the cost of living was generally higher than Illinois. For example, cluster 3 included Eastern Illinois University and several institutions from the state of New York. The New York cost of living adjusted index was 107.2 in comparison to an index of 100.0 for Illinois. As a result, the mean compensation figure for Eastern Illinois University reflected a larger relative dollar difference from the cluster average than actually existed.

In four of the clusters of Illinois public institutions, the adjustments for cost of living had the opposite effect. In clusters 6, 11, 12, and 17, the adjustment had the effect of increasing the magnitude of the loss/gain of the Illinois institutions in comparison to other institutions in the cluster. These clusters tended to be weighted with institutions in states in which the cost of living index was lower than that of Illinois.

THROUGHOUT THIS STUDY, THE DATA UTILIZED WERE THE SALARY AND COMPENSATION DATA AFTER THEY HAVE BEEN ADJUSTED FOR THE COST OF LIVING DIFFERENCES.

LIMITATIONS

The size and scope of this study provided a comprehensive analysis of faculty salary and compensation. However, the results of the study must be interpreted with the following limitations in mind. The data utilized for the majority of the variables included in this study were based on self-reported information that had been compiled and disseminated by external agencies. The accuracy of the data included within this study was limited to the accuracy of the reports submitted by institutions and disseminated by external agencies.

The comparison of institutional salary and compensation was based on the relative standing of institutions within clusters. The cluster analysis was limited by the variables selected to be used in this study. Given additional variables, the factor score patterns and cluster arrangements could provide different groups of institutions. Secondly, the variables utilized were heavily weighted with quantitative measures of institutions as opposed to measures of institutional quality. Although some quality measures were included in this study, the research was limited by the lack of recognized measurements of institutional quality.

Another limitation of the cluster analysis was the existing variation among institutions within each cluster. Although the current methodology provided groups of institutions based on similar factor score patterns, there was a necessary variation among institutions within a cluster on individual variable scores. Given the complexity of institutional characteristics, it was not possible to identify institutions which were identical on all variables utilized. Although the factor analysis provided a reasonable technique by which to reduce the large number of variables to a smaller set of closely related variables, the resulting factor was actually an unobserved variable for which there was no direct observation. However, the limitations involved in using the factor analytic approach was considered to be less serious than the limitations that would have resulted if a smaller number of variables had been used.

The salary and compensation analyses were greatly aided by the addition of the cost of living index for each state. However, it was recognized that cost of living differences also existed within each state. The methodology utilized in this study would be greatly advanced by the development of a cost of living index for each county within each state. (For example, a cost of living index by county does exist for the State of Illinois.) The present study was limited to the adjustments made in salary and compensation based on a state-by-state comparison.

The all-rank salary and compensation data were limited by the fact that the quartile rankings of institutions would be affected by the differences in the proportion of faculty hired at each rank within each institution in a cluster (i.e., faculty mix). The accuracy of interpretation of the all-rank data in this study was limited to its use in conjunction with the data collected at each faculty rank.

COMMENTARY

The major advancement of this study was considered to be the application of the research methodology to the study of faculty salary and compensation. The utilization of the factor analysis, cluster analysis, and discriminant analysis methodology provided a viable alternative to threshold models previously used.[12] The disadvantages of the threshold models are twofold. First, the discrimination among groups of institutions is based on limited numbers of variables (e.g., number of doctoral programs offered and amount of research dollars generated). An institution is classified into a certain category when it reaches the predetermined threshold value for the discriminating variables. This approach ignores the interaction that may occur among the multiple variables that could have a possible effect upon the classification of an institution.

The second concern generated by the threshold model is its dependence on the deductive approach to research. The deductive approach used in the threshold models first establishes criteria for inclusion of an institution into selected categories and then fits the institutions to the predetermined categories. Reliance solely on one method, either deductive or inductive, may prohibit the discovery of new generalizations and may inhibit advances in research.[13] The present methodology utilized a combination of inductive and deductive processes. Whereas selection of the twenty-seven variables used in this study was dependent upon the process of deduction, the inductive process was used in the factor analysis process. More specifically, instead of predetermining the variables that would discriminate among categories of institutions, the variables were entered into the factor-cluster-discriminant routines and the discriminating factors were ascertained from the interaction of the variables. It is not being suggested that the threshold models are not appropriate to the research arena. However, it is concluded that it is not necessary to rely solely on the threshold models for the classification of institutions. The application of the Terenzini et al. model to the current study was found to provide an alternative method for research and analysis. The need for the development of systematic alternative research models was frequently cited in the review of the literature. It was suggested that a typology of institutions was a central prerequisite to the systematic study and understanding of organizational diversity. This study investigated an alternative typology that is thought to have credibility for institutional analysis.

In addition to addressing the major criticisms of the threshold models, the present research addressed two major problems that have plagued the AAUP classification method. These two problems were: (1) the AAUP categories have been criticized for their lack of homogeneity, and (2) the salary and compensation data have not been adjusted for cost of living differentials. Although the AAUP expanded its number of categories from three to five in response to the first criticism, results of the present study suggest that even five categories are not refined enough to differentiate among clusters of institutions. A total of forty-five clusters were obtained through the Cluster Analytic Model. Second, the present study included a cost of living index for each state and thus avoided the criticism that has been incurred by the AAUP studies. It was concluded that the present methodology could be utilized to refine and expand the AAUP methodology. However, since the AAUP system is based on the threshold model, it would still have the limitations inherent with these models unless it changed its entire classification methodology.

A third conclusion of this study was that the institutions of higher education in Illinois generally received lower salary and compensation when data were adjusted for cost of living than did their counterparts in other states during the 1975 through 1980 period. This conclusion was based on the relative difference that was found to exist within clusters of institutions with

similar factor score patterns. As can be seen in Tables 10 and 11 the comparison of the relative standing of institutions of higher education over a five-year period of time suggested that there was a general decline of Illinois salary and compensation in relation to other institutions within the clusters. In some Illinois institutions, the relative standing of the institution remained stable across time. However, it was not possible to measure relative decline in many of these institutions because they had remained in the lowest quartile across all three years of study.

This finding will be related to some basic concepts of economic theory. Economists consider the market to be the regulator of economic conditions. Within the context of the market, it would be concluded that the supply of faculty members available to institutions of higher education in Illinois must exceed the demand of the market. When the supply of human resources exceeds the demands of the market, the financial rewards of the profession decline.[14] The financial attractiveness of the profession of an Illinois faculty position has generally declined in relationship to this profession in other states.

It can also be derived from this study that a state of equilibrium did not exist in the Illinois marketplace between 1975-80. Equilibrium is the term used by economists to describe the state at which interaction of supply and demand no longer provide an impetus for change.[15] It can be concluded from the five-year study that a relative negative change in status occurred between 1975-80, and that a buyers' market must have existed in Illinois at the time of this study. It has been suggested by economists that in a buyers' market, the only way the surplus of suppliers (faculty members) can be decreased is by reducing the price. It was predicted that the sellers' market that existed for university faculty was likely to disappear in the 1970s, and that academicians would experience a decline in their relative income position due to market forces. This prediction was substantiated by this study for the state of Illinois.

However, there was some indication that this trend might be changing in Illinois. Among some Illinois public institutions there was a relative gain in salary and compensation standing for instructors and assistant professors, typically the entry level ranks. It is possible that the generally low salary and compensation levels in Illinois resulted in a competitive market for entry level positions. In order to attract the "suppliers" of human services to Illinois institutions, the "demanders" of human services may have had to increase the salary levels of incoming faculty members. This situation is similar to the conditions that were found to exist between 1904 and 1953. During that time period, real wages for professors, associate professors, and assistant professors were found to have decreased, but the real wages of instructors were found to have increased by thirty-eight percent.

TABLE 10

RELATIVE QUARTILE PLACEMENTS OF ILLINOIS PUBLIC INSTITUTIONS--ALL-RANK SALARY ADJUSTED FOR COST OF LIVING 1975-1980

QUARTILE	I	II	III	IV
1974-75	Southern Illinois Univ-Carbondale Illinois State Univ Northern Illinois Univ	Eastern Illinois Univ Sangamon State Univ Chicago State Univ Western Illinois Univ Univ of Illinois-Urbana	Northeastern Southern Ill Univ-Edwardsville Univ of Illinois-Chicago Circle Governors State Univ	---
1979-80	Southern Illinois Univ-Carbondale Illinois State Univ Northern Illinois Univ Eastern Illinois Univ Chicago State Univ of Illinois-Chicago Circle	Northeastern Western Illinois Univ Governors State Univ	Southern Ill Univ-Edwardsville Sangamon State Univ Univ of Illinois-Urbana	

TABLE 11

RELATIVE QUARTILE PLACEMENTS OF ILLINOIS PUBLIC INSTITUTIONS--ALL-RANK COMPENSATION ADJUSTED FOR COST OF LIVING 1975-1980

QUARTILE	I	II	III	IV
1974-75	Eastern Illinois Univ Western Illinois Univ Southern Illinois Univ-Carbondale Illinois State Univ	Northeastern Chicago State Southern Illinois Univ-Edwardsville Univ of Illinois-Chicago Circle Governors State Univ Univ of Illinois-Urbana Northern Illinois Univ	Sangamon State Univ	---
1979-80	Eastern Illinois Univ Western Illinois Univ Southern Illinois Univ-Carbondale Univ of Illinois-Chicago Circle Univ of Illinois-Urbana Illinois State Univ Northern Illinois Univ	Sangamon State Univ Northeastern Chicago State Southern Illinois Univ-Edwardsville Governors State Univ		

In a similar analysis conducted during the period of 1961-1970, the salaries of professors were found to have increased at a faster rate than the salaries of associate professors, assistant professors, and instructors. The trend in 1961-70 could have been a response to the relative decline of professor salaries in the years from 1904-51. The present status of the compensation at the upper ranks in Illinois suggested that the trend had gone full cycle by 1975-80.

The situation in Illinois may be somewhat different than in the nation as a whole. In the 1979-80 AAUP report, instructors were found to suffer the largest decline in real wages, and each successive rank was reported to have experienced a somewhat smaller decline.[16] The AAUP interpreted this finding to suggest that the abundance of Ph.D.s seeking initial appointments resulted in relatively lower starting salaries than in previous years. However, results of the AAUP study of continuing faculty members were similar to those found in Illinois. In the AAUP study, the larger percentage increases were awarded to faculty members at the lower ranks rather than the higher ranks. While part of this finding was attributed to the method used by AAUP to study continuing faculty data, the AAUP also suggested that there may be a tendency to award larger percentage increases to junior faculty members to help them cope with inflation. It was also suggested that there may be efforts to give larger salary increases to younger faculty members in an effort to retain and reward promising faculty members who will form the core of the future university.

The validity of the market model has been criticized by those in higher education on the basis that the conditions of faculty employment do not produce a perfectly competitive market. It has been stated that subtle market forces other than supply and demand affect the salaries of university faculty. It has been recognized that the nonpecuniary benefits of the university work environment may reduce the negative effects of relatively low salary and compensation. While it has been recognized that it would be naïve to assume that faculty have no need for material rewards, it would be equally naïve to ignore the nonmaterial incentives provided by a university environment.

If a complex organization can indeed be conceptualized as an incentive system, then it has been claimed that inadequate incentives result in the dissolution of the organization, changes of organizational purpose, or failure of cooperation, and general reduction in organizational quality. While it was beyond the scope of this study to assess these four conditions, it was obvious that the institutions of higher education have not dissolved. However, the effects of inadequate incentives on the quality of an institution are not as easily observed, but are considered to be extremely important. In light of the results of this study, it might be assumed that incentives other than the monetary have been contributing to the ability of institutions to remain in existence. Material incentives by themselves have been considered to be weak incentives.[17] Barnard held that the organization must

be concerned about the economy of incentives, i.e., the net satisfaction equivalent to the satisfaction derived from the interaction of pecuniary and nonpecuniary benefits. It was suggested in Chapter 2 that a theory base for the study of faculty salary and compensation must rely on both economic theory and organizational theory. The complexity of the incentive system has been thought to have the potential to bridge the gap between the study of individual behavior and organizational behavior.[18] Given this assumption, the results of this study should be compared to the literature on nonpecuniary benefits to ascertain relative contributions to maintenance of organizational behavior when the monetary benefits are low and on the decline.

Given the results of this study, it might be suggested that decision makers in the state of Illinois should act to increase the relative standing of faculty member salary and compensation. One of three major abstractions in economic theory, rationality, assumes that decision makers will act reasonably in making decisions that affect the economic well-being of the organization. Economic rationality postulates that greater amounts of a service are preferable than less, given the service provides pleasure rather than pain. But the concept of rationality also implies that measures will be adopted that will allow a minimum of resources in attainment of a given goal.[19] Given this assumption, the question of goal setting becomes of immediate importance for policy makers. At what level of relative standing can the Illinois institutions remain or become effective competitors in the university market? Will a second quartile, median, or third quartile ranking provide the competitive status desirable to the maintenance of a quality university system? Once this goal has been established, university and state-level administrators can expand their base upon which to seek changes in the compensation system. It is not anticipated that policy decisions regarding the compensation of university faculty will be a simple process.

CONCLUSIONS

Several observations were made as a result of this study. A summary of the major conclusions is listed below.

1. The utilization of the factor analysis, cluster analysis, and discriminant analysis provided a viable alternative to the existing models for the classification of institutions of higher education.

2. The methodology used in this study resulted in a classification system of institutions of higher education that included forty-five clusters of institutions that were grouped according to similar factor score patterns. The system provided a refinement in classification typology that was used for purposes of interinstitutional comparison of salary and compensation.

3. The adjustment of the salary and compensation data for cost of living differences was found to be essential to the comparison of institutional data within the cluster groupings.

4. The institutions of higher education in Illinois were generally found to receive lower salary and compensation than did institutions with similar characteristics in other states.

5. The salary and compensation in institutions of higher education in Illinois were generally found to have declined in relative standing between 1974-75 and 1979-80. The five-year study suggested that a relative negative change in status occurred among Illinois institutions.

6. The relative standing of salaries and compensation for instructors and assistant professors in Illinois public institutions was generally found to be higher than that of professors and associate professors. This observation suggested that the relatively low salary and compensation levels in Illinois institutions might be having an effect on the ability of the state to compete for new faculty members in the academic marketplace. Consequently, there appeared to be a trend to provide salary increases at the entry level ranks that was disproportionate to salary increases at the upper academic ranks.

7. The clusters of public institutions were distinguishable from one another primarily by measures of size and comprehensiveness and by the emphasis given to master level programs. In contrast, clusters of private institutions were distinguishable from one another primarily by measures reflecting emphasis at both the masters and doctoral levels, and were less differentiated by measures of size and comprehensiveness.

8. Classification of the twelve Illinois public institutions into eight separate clusters suggested that the institutional characteristics of the Illinois public institutions were dissimilar enough from one another that consideration should be given to the between group and within group differences in the determination of salary and compensation decisions.

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APPENDIX

Eighteen Clusters Of Public Institutions

EIGHTEEN CLUSTERS OF PUBLIC INSTITUTIONS

Cluster Group 01

Alabama A and M
University of S. Alabama
University of Central Arkansas
Henderson State University
S. Arkansas University--Main
University of S. Colorado
Western State--Colorado
Armstrong State
Augusta
Columbus
Fort Valley State
Georgia Southern
Savannah State
Valoosta State
Purdue University--Calumet
Fort Hays Kansas State
Kentucky State
Nichols State University
Grambling State University
Frostburg State
Morgan State
Westfield State
Bemidji State University
Winona State
Alcorn State University
Lincoln University
N.W. Missouri State University
Chadron State
Wayne State
University of New Hampshire--Keene State
University of New Hampshire--Plymouth State
Eastern New Mexico University--Main
New Mexico Highlands University
North Carolina Central
Western Carolina
Minot State
Eastern Central Oklahoma
Northwestern Oklahoma State
Southeastern Oklahoma State
Southwestern Oklahoma State University
Eastern Oregon State
Southern Oregon State
Black Hills State
Northern State
Austin Peay State University
University of Tennessee--Chattanooga
University of Tennessee--Martin
Midwestern State University
W. Texas State University
Castleton State
Johnson State
Lyndon State
Longwood
Radford
University of Wisconsin--River Falls

Cluster Group 02

University of Arkansas--Little Rock
Boise State University
Southeastern Louisiana University
Boston State
Bridgewater State
Framingham State
Grand Valley State
Northern Michigan
University of Minnesota--Duluth
Jackson State
University of Missouri--St. Louis
University of Nebraska--Omaha
Youngstown State
Angelo State University
Sam Houston State University
University of Texas--El Paso
George Mason University
Norfolk State
Marshall University
University of Wisconsin--Stout
University of Wisconsin--Eau Claire
University of Wisconsin--LaCrosse
University of Wisconsin--Stevens Point
Florida Technological University
Wright State University--Main
North Dakota State University

Cluster Group 03

Humboldt State University
California State--Stanislaus
Adams State
Eastern Illinois University
University of Lowell
Southeastern Mass University
Mankato State University
Moorhead State University
Delta State University
Mississippi University for Women
Kearney State College
University of Nevada--Reno
University of New Hampshire
Suny at Fredonia
Suny--Geneseo
Suny--Oneonta
Suny College at Plattsburgh
Suny--Potsdam
North Carolina Agrl. and Tech. State University
Bloomsburg State
Edinboro State College
Kutztown State
Mansfield State College
Millersville State College
West Chester State
South Dakota State University
Tennessee Technological University
University of Vermont and St. Ag. College
Central Washington State University
Eastern Washington University
West Washington State University
University of Wisconsin--Platteville
University of Wisconsin--Superior
University of Wisconsin--Whitewater
California State--Bakersfield
Clarion State College--Main Campus
University of Wisconsin--Oshkosh

Cluster Group 04

Arkansas State University--Main
University of Delaware
Florida Agri. and Mech. University
Idaho State
University of Northern Iowa
Wichita State
Eastern Kentucky
Louisiana Tech.
University of New Orleans
University of Southwestern Louisiana
St. Cloud State University
Southeastern Missouri State
Southwestern Missouri State
Montana State
New Mexico State
Bowling Green--Ohio
University of Akron
Clemson University
Tennessee State University
Lamar University
James Madison University
Old Dominion University

Cluster Group 05

Pittsburgh State
Emporia State
Morehead State University
Murray State University
Western Kentucky
Central Missouri State
Northeastern Missouri State
Appalachian University
Winthrop
Stephen Austin University
Texas A and I
Southern University A and M--Main

Cluster Group 06

Troy State University--Main Campus
California State--San Bernardino
Western Connecticut State
Eastern Connecticut State
Georgia Southwestern College
Northern Georgia University
Georgia College
Indiana-Purdue University--Fort Wayne
Indiana University--Northwest
Washburn University of Topeka
University of Louisville
Salisbury State
North Adams State
Saginaw Valley State
Rutgers University Newark Campus
Western New Mexico University
Cleveland State University
College of Charleston
Tarleton State University
Virginia Commonwealth University
University of Colorado--Colorado Springs
University of Colorado--Denver
Suny-Utica-Rome
Sangamon State University
University of Maine-Portland-Gorham
University of Texas--San Antonio
Texas Eastern University
University of Houston--Clear Lake City

Cluster Group 07

California State University--Hayward
California State--Dominquez Hills
Sonoma State University
Central Connecticut State College
Southern Connecticut State College
University of South Florida
Northeastern Illinois University
Chicago State University
SIU--Edwardsville
Western Illinois University
Towson State University
Massachusetts State--Salem
Central Michigan University
Eastern Michigan
Glassboro State College
Jersey City State College
Montclaire State College
William Patterson College
Trenton State College
Suny at Brockport
Suny at Buffalo
Suny at Cortland
Suny--New Platz
Suny at Oswego
East Carolina University
University of North Carolina at Charlotte
Portland State University
Shippensburg State College
Citadel Military College of South Carolina
University of Wisconsin--Milwaukee
University of West Florida
Florida International University

Cluster Group 08

Jacksonville State
Kean College of New Jersey
Central State University
Pan American University
Southwest Texas State University

Cluster Group 09

University of Alabama--Huntsville
University of Arkansas--Monticello
University of Arkansas--Pine Bluff
Fort Lewis
Mesa
Metropolitan State
Delaware State
Albany State
Lewis-Clark State
Indiana State University--Evansville
Louisiana State University--Shreveport
Southern University New Orleans
University of Maine--Presque Isle
University of Maine--Fort Kent
St. Mary's College of Maryland
University of Maryland--Baltimore Coun.
University of Maryland--Eastern Shore
University of Massachusetts--Boston Ca.
Ferris State
Michigan Technological University
Lake Superior State
University of Michigan--Dearborn
University of Michigan--Flint
Southwest State University
University of Minnesota--Morris
Mississippi Valley State University
Missouri Southern State
Missouri Western State
Peru State
Suny--Maritine
University of North Carolina at Asheville
Elizabeth City State University
Fayetteville State University
Pembroke State University
University of North Carolina at Wilmington
Winston-Salem State University
Dickinson State
Central State University
Cameron University
University of Science and Arts of Oklahoma
Oklahoma Panhandle State
Lincoln University
Lock Haven State
Lander
Dakota State
University of Tennessee--Nashville
Southern Utah State
Weber State
Christopher Newport
Mary Washington
University of Virginia--Clinch Valley
Virginia Military Institute
Bluefield State
Concord
Fairmont State
Shepherd
West Liberty State
West Virginia Institute of Technology
West Virginia State
University of Wisconsin--Green Bay
Rutgers University--Camden Campus
University of Wisconsin--Parkside
Suny--Purchase
Suny--Old Westbury
Ramapo College of New Jersey
Stockton State

Cluster Group 10

University of North Alabama
West Georgia
Oakland University
Northeastern Oklahoma State University
South Carolina State
Francis Marion
University of North Florida

Cluster Group 11

Auburn University--Main Campus
Arizona State University
University of Arizona
Colorado State University
University of Colorado at Boulder
Florida State University
University of Florida
University of Georgia
University of Hawaii at Manoa
SIU--Carbondale
University of Indiana--Bloomington
Iowa State University Science and Technology
University of Iowa
University of Kansas--Main Campus
University of Kentucky
Louisiana State University--A and M College
University of Maryland--College Park Campus
University of Massachusetts--Amherst
Wayne State
University of Missouri--Columbia
University of Nebraska--Lincoln
North Carolina State University--Raleigh
University of North Carolina at Chapel Hill
University of Cincinnati--Main Campus
Oklahoma State University--Main Campus
University of Oklahoma--Norman
Oregon State University
University of Oregon--Main Campus
Temple University
University of Pittsburgh--Main
University of South Carolina--Columbia
University of Tennessee--Knoxville
Texas Technological University
University of Houston--Central Campus
University of Utah
Virginia Polytechnic Institute
Washington State University
West Virginia University
Rutgers University--New Brunswick
Penn State University--Main Campus
University of Virginia--Main Campus
University of New Mexico--Main Campus

Cluster Group 12

Kansas State University of Agr. and Applied Science
University of Alabama
Northern Arizona University
University of Arkansas--Main Campus
CSUC--San Francisco
University of Northern Colorado
Florida Atlantic University
Georgia State University
University of Idaho
Illinois State University
Northern Illinois University
Ball State University
McNeese State University
Northeast Louisiana University
Northwestern State University of Louisiana
University of Maine--Orono
Western Michigan University
Mississippi State
University of Mississippi--Main Campus
Southern Mississippi
University of Missouri--Kansas City
University of Montana
University of Nevada--Las Vegas
University of North Carolina at Greensboro
University of North Dakota--Main Campus
Kent State University--Main Campus
Ohio University--Main Campus
University of Toledo
University of South Dakota--Main Campus
Eastern Tennessee State University
Memphis State University
Middle Tennessee State University
East Texas State
North Texas State University
Texas Southern University
Texas Womans University
Utah State University
College of William and Mary
University of Wyoming
Miami University--Main Campus
Indiana State University--Main Campus

Cluster Group 13

Georgia Institute of Technology
New Mexico Institute--Mining and Technology
Suny--Albany
Suny at Binghamton
Suny-Buffalo--Main Campus
Suny-Stony Brook--Main Campus
Suny--Environmental Sciences
University of Rhode Island
Cornell University--Statutory Campus

Cluster Group 14

California State University--Fullerton
California State University--Long Beach
California State University--Los Angeles
California Poly State University--San Luis Obispo
California State Poly University--Pomona
California State University--Chico
California State University--Fresno
California State University--Sacramento
CSUC--San Diego
California State--Northridge
San Jose State
University of Illinois--Chicago Circle
University of Texas--Arlington

Cluster Group 15

University of Alabama--Birmingham
University of Indiana-Purdue--Indianapolis
Indiana University--South Bend
University of Baltimore
Auburn University--Montgomery
Northern Kentucky University

Cluster Group 16

Worchester State College
Governors State University
University of Texas--Permian Basin
Suny Empire State College

Cluster Group 17

University of Illinois--Urbana/Champaign
Purdue University--Main Campus
Michigan State University
University of Texas--Austin
University of Washington
University of Wisconsin--Madison
University of Minnesota--Minneapolis/St. Paul
Ohio State University--Main Campus
University of Michigan--Ann Arbor
Texas A and M University--Main Campus

Cluster Group 18

University of California